



### Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

**1. (Canceled)**

**2. (Current amended)** The apparatus of claim ~~1~~46, wherein the processor is configured to track ~~additionally comprising: means for tracking~~ at least one of said at least one target, ~~said means of tracking comprising means for~~ by measuring motion parameters of said target.

**3. (Canceled)** ~~The apparatus of claim 1, wherein said image acquisition means comprises a digital camera.~~

**4. (Current amended)** The apparatus of claim ~~3~~46, wherein said digital camera is CMOS type.

**5. (Current amended)** The apparatus of claim ~~1~~43, wherein said ~~image processing processor means comprises~~ is a DSP.

**6. (Current amended)** The apparatus of claim ~~1~~43, wherein said ~~image processing means comprises~~ processor is a FPGA.

**7. (Currently amended)** The apparatus of claim ~~1~~46, wherein ~~said means for determining the processor is configured to compute an initial parametric representation of said scene comprises means for computing~~ said initial parametric representation from a plurality of acquired images.

**8. (Currently amended)** The apparatus of claim 7, wherein ~~said means for computing said initial parametric representation comprises means for computing~~ the processor is configured to compute an average pixel image and ~~means for computing~~ a standard deviation pixel image from said plurality of acquired images.

9. **(Currently amended)** The apparatus of claim 7, wherein ~~said means for computing said initial parametric representation comprises means for computing~~ the processor is configured to compute a minimum pixel value image and a maximum pixel value image from said plurality of acquired images.

10. **(Currently amended)** The apparatus of claim 7, wherein ~~said means for computing said initial parametric representation comprises means for computing~~ the processor is configured to compute an average derivative value image and a standard deviation derivative pixel value image from said plurality of acquired images.

11. **(Currently amended)** The apparatus of claim 8, wherein ~~said means for updating said parametric representation comprises means for computing the~~ processor is configured to compute, for each pixel of said parametric representation, a new average pixel value and a new standard deviation value, using the value of a newly acquired pixel and a predetermined weight coefficient.

12. **(Currently amended)** The apparatus of claim 9, wherein ~~said means for updating said parametric representation comprises means for computing the~~ processor is configured to compute, for each pixel of said parametric representation, a new minimum pixel value and a new maximum pixel value, according to the value of a newly acquired pixel.

13. **(Currently amended)** The apparatus of claim 12, wherein ~~the maximum difference between said new minimum pixel value and the a previous minimum pixel value there is a maximum difference equal to 1, and wherein the maximum difference between said new maximum pixel value and the a previous maximum pixel value there is a maximum difference equal to 1.~~

14. **(Currently amended)** The apparatus of claim 10, wherein the processor is configured to compute ~~said means for updating said parametric representation comprises means for computing~~, for each pixel of said parametric representation, a new average derivative pixel value and a new standard deviation derivative value, using the value of a newly acquired pixel and a predetermined weight coefficient.

15. **(Currently amended)** The apparatus of claim 8, wherein the processor is configured to compute ~~said means for determining~~ whether a pixel is a hot pixel ~~comprises means for~~ by comparing ~~the~~ a difference between ~~the~~ an actual value and ~~the~~ an average value of said pixel with the standard deviation of said pixel.

16. **(Currently amended)** The apparatus of claim 9, wherein the processor is configured to compute ~~said means for determining~~ whether a pixel is a hot pixel ~~comprises means for~~ by comparing ~~the~~ a difference between ~~the~~ an actual value and the minimum and maximum values of said pixels.

17. **(Currently amended)** The apparatus of claim 10, wherein ~~said means for determining~~ the processor is configured to compute whether a pixel is a hot pixel ~~comprises means for~~ by comparing the difference between ~~the~~ an actual derivative value and ~~the~~ an average derivative value of said pixel with the standard deviation derivative of said pixel.

18. **(Currently amended)** The apparatus of claim ~~146~~, wherein the processor is configured to define ~~said means for defining~~ at least one target ~~comprises means for~~ by segmenting said hot pixels into connected components.

19. **(Currently amended)** The apparatus of claim ~~146~~, wherein the processor is configured to count ~~said means for measuring predefined parameters~~ ~~comprises means for counting~~ the hot pixels in said target.

20. **(Currently amended)** The apparatus of claim ~~146~~, wherein ~~said means for measuring predefined parameters~~ ~~comprises means for calculating~~ the processor is configured to compute a ~~the~~ circumscribing rectangle circumscribing ~~of~~ said target.

21. **(Currently amended)** The apparatus of claim ~~146~~, wherein the processor is configured to analyze ~~said means for determining whether said target is of interest~~ ~~comprises means for analyzing~~ said measured predefined parameters according to said application-specific criteria.

22. **(Currently amended)** The apparatus of claim 2, wherein the processor is configured to match ~~said means for measuring motion parameters~~ ~~comprises~~

~~means for matching~~ said target with ~~the same~~ an identical target in a previously captured image.

**23. (Currently amended)** The apparatus of claim 22, wherein ~~said means for matching comprises means for calculating the~~ processor is configured to compute geometric centers of gravity of said target in said image and the previously captured image~~two images~~.

**24. (Currently amended)** A method of scene interpretation, comprising ~~the steps of:~~

determining an initial parametric representation of said scene;

updating said parametric representation according to predefined criteria;

acquiring an image of said scene;

analyzing said image, ~~said step of analyzing comprising the steps of: by~~  
~~determining, for each pixel of said image, whether it is a hot pixel~~ which of said  
pixels are hot pixels, according to predefined criteria;

defining at least one target from said hot pixels;

measuring predefined parameters for at least one of said at least one target;

and

determining, for at least one of said at least one target whether said target is of interest, according to application-specific criteria; and

outputting the results of said analysis.

**25. (Currently amended)** The method of claim 24, additionally comprising ~~the step of:~~

tracking at least one of said at least one target, said step of tracking comprising the step of measuring motion parameters of said target.

**26. (Currently amended)** The method of claim 24, wherein ~~said step of~~ determining an initial parametric representation of said scene comprises computing said initial parametric representation from a plurality of acquired images.

**27. (Currently amended)** The method of claim 26, wherein ~~said step of~~ computing said initial parametric representation of said scene comprises

computing an average pixel image and a standard deviation pixel image from said plurality of acquired images.

**28. (Currently amended)** The method of claim 26, wherein ~~said step of~~ computing said initial parametric representation of said scene comprises computing a minimum pixel value image and a maximum pixel value image from said plurality of acquired images.

**29. (Currently amended)** The method of claim 26, wherein ~~said step of~~ computing said initial parametric representation of said scene comprises computing an average derivative value image and a standard deviation derivative pixel value image from said plurality of acquired images.

**30. (Currently amended)** The method of claim 27, wherein ~~said step of~~ updating said parametric representation comprises computing, for each pixel of said parametric representation, a new average pixel value and a new standard deviation value, using the value of a newly acquired pixel and a predetermined weight coefficient.

**31. (Currently amended)** The method of claim 28, wherein ~~said step of~~ updating said parametric representation comprises computing, for each pixel of said parametric representation, a new minimum pixel value and a new maximum pixel value, according to the value of a newly acquired pixel.

**32. (Currently amended)** The method of claim 31, wherein ~~the maximum difference between~~ said new minimum pixel value and ~~the a~~ previous minimum pixel value there is a maximum difference equal to 1, and ~~wherein the maximum difference between~~ said new maximum pixel value and ~~the a~~ previous maximum pixel value there is a maximum difference equal to 1.

**33. (Currently amended)** The method of claim 29, wherein ~~said step of~~ updating said parametric representation comprises means for computing, for each pixel of said parametric representation, a new average derivative pixel value and a new standard deviation derivative value, using the value of a newly acquired pixel and a predetermined weight coefficient.



34. (Currently amended) The method of claim 27, wherein ~~said step of~~ determining whether a pixel is hot comprises comparing the difference between ~~the~~ an actual value and ~~the~~ an average value of said pixel with the standard deviation of said pixel.

35. (Currently amended) The method of claim 28, wherein ~~said step of~~ determining whether a pixel is a hot pixel comprises comparing the difference between ~~the~~ an actual value and the minimum and maximum values of said pixels.

36. (Currently amended) The method of claim 29, wherein ~~said step of~~ determining whether a pixel is a hot pixel comprises comparing the difference between ~~the~~ an actual derivative value and ~~the~~ an average derivative value of said pixel with the standard deviation derivative of said pixel.

37. (Currently amended) The method of claim 24, wherein ~~said step of~~ defining at least one target comprises segmenting said hot pixels into connected components.

38. (Currently amended) The method of claim 24, wherein ~~said step of~~ measuring predefined parameters comprises counting the hot pixels in said target.

39. (Currently amended) The method of claim 24, wherein ~~said step of~~ measuring predefined parameters comprises calculating ~~the~~ a ~~circumscribing~~ rectangle ~~of~~ circumscribing said target.

40. (Currently amended) The method of claim 24, wherein ~~said step of~~ determining whether said target is of interest comprises analyzing said measured predefined parameters according to said application-specific criteria.

41. (Currently amended) The method of claim 25, wherein ~~said step of~~ measuring motion parameters comprises matching said target with ~~the same~~ an identical target in a previously captured image.

42. (Currently amended) The method of claim 41, wherein ~~said step of~~ matching comprises calculating ~~the~~ geometric centers of gravity of said target in said image and the previously captured image ~~two images~~.

**43. (New)** A miniature autonomous apparatus for scene interpretation, comprising:

a digital camera for producing an image of a scene; and

a processor associated with said camera, said processor adapted to run at least a dynamic range control process and an image processing detection process;

said dynamic range control process being adapted to communicate with said detection process for adapting the detection process to changed dynamic range settings of the camera.

**44. (New)** The apparatus of claim 43, wherein the image processing detection process is configured to determine an initial parametric representation of the scene and to continuously update said parametric representation to slow changes in the scene.

**45. (New)** The apparatus of claim 44, wherein said slow changes include changes in illumination.

**46. (New)** The apparatus of claim 43, wherein the processor is configured to:

determine an initial parametric representation of said scene;

update said parametric representation according to predefined criteria;

analyze pixels of said image so as to determine which of said pixels are hot pixels, according to predefined criteria;

define at least one target from said hot pixels;

measure predefined parameters for at least one of said at least one target;

and

determine for at least one of said at least one target whether said target is of interest, according to application-specific criteria.

**47. (New)** The apparatus of claim 43, wherein digital camera has a frame size of the order of 1800 pixels and the image processing detection process is adapted to process 1 frame per second.

**48. (New)** The apparatus of claim 43, wherein the image processing detection process is adapted to process less than 30 million pixels per second.